

WHAT IS CLAIMED IS:

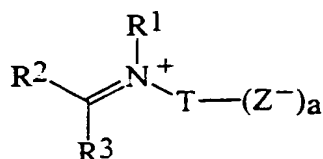
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1. A detergent composition comprising a detergent ingredient, a pectate lyase enzyme and bleach system selected from the group consisting of a metal bleach catalyst; a combination of a peroxygen source and a bleach booster selected from the group consisting of zwitterionic imines, anionic imine polyions having a net negative charge of from -1 to -3, and/or mixtures thereof; a diacyl peroxide and/or mixtures thereof.
 - 10 2. A detergent composition according to claim 1 wherein the metal bleach catalyst is selected from :
 - (a) the $[Mn(Bcyclam)Cl_2]$ catalyst;
 - (b) the cobalt catalyst having the formula : $Co[(NH_3)_n M_m B_b T_t Q_q P_p] Y_y$ wherein Cobalt is in the +3 oxidation from, n is an integer from 0 to 5, preferably 4-5, more preferably 5; M represents a monodentate ligand; m is an integer from 0-5, preferably 1 or 2, more preferably 1; B represents a bidentate ligand; b is an integer from 0-2; T represents a tridentate ligand; t is 0 or 1; Q is a tetradentate ligand; q is 0 or 1; P is an pentadentate ligand; p is 0 or 1 and $n+m+2b+3t+4q+5p=6$; Y is one or more appropriately selected counteranions present in a number y, where y is an integer from 1-3, preferably 2-3, more preferably 2 when Y is a -1 charged anion, to obtain a charge-balanced salt;
 - (c) the cobalt catalyst having the formula $[Co(NH_3)_5 M] T_y$ wherein cobalt is in the +3 oxidation state; M is a carboxylate-containing ligand having the formula $RC(O)O^-$; and T is one or more counteranions present in a number y, where y is an integer to obtain a charge-balanced salt (preferably from 1-3, more preferably 2 when T is a -1 charged anion); and/or mixtures thereof.
 - 30 3. A detergent composition according to 1-2 comprising said metal bleach catalyst and further comprising a peroxygen source, preferably selected from the group consisting of a hydrogen peroxide source, a peroxyacid bleach precursor compound, and/or mixtures thereof.

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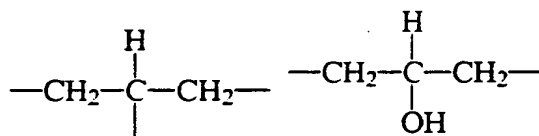
4. A composition according to claims 2-3 wherein the metal bleach catalyst is present in an amount of from 1ppb to 10%, preferably from 0.1ppm to 1%, more preferably from 1ppm to 0.1% by weight of total composition.
5. A detergent composition according to any of the preceding claims wherein said diacyl peroxide is selected from the group consisting of dibenzoyl peroxide, benzoyl glutaryl peroxide, benzoyl succinyl peroxide, di(2-methyl benzoyl) peroxide, and/or mixtures thereof.
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6. A detergent composition according to claim 5 wherein said diacyl peroxide is dibenzoyl peroxide.
- 10 7. A detergent composition according to any of the preceding claims wherein said diacyl peroxide is comprised in a particle; said particle comprising from 1-80% by weight of said particle of diacyl peroxide, from 0.01-95% by weight of said particle of a water soluble stabilising additive.
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8. A detergent composition according to claim 7 wherein said stabilising additive is selected from the group consisting of alkali metal sulfates and citrates, ethoxylated C16-20 alcohols, polyethylene glycols melting above 100°F, maltodextrins, polyacrylate polymers and copolymers of molecular weight between 1.000 and 80.000, ethylene diamine tetra-acetates, ethylene diamine disuccinates and/or mixtures thereof.
9. A detergent composition according to claim 1-4 wherein said diacyl peroxide is dilauroyl peroxide.
- 25 10. A detergent composition according to any of the preceding claims wherein said diacyl peroxide is comprised at a level of from 0.01% to 20% by weight of the composition, preferably 0.5% to 10%, more preferably 0.2% to 3%.
- 30 11. A detergent composition according to claims 7-10 wherein the diacyl peroxide is incorporated into a particulate and said particle is comprised at a level of from 0.1% to 30%, preferably from 1% to 15%, more preferably from 1.5% to 10% of the total composition.

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TOTAL 558888

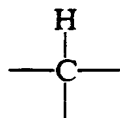
12. A detergent composition according to any of the preceding claims wherein said bleach booster is selected from the group consisting of aryliminium zwitterions, aryliminium polyions having a net negative charge of from -1 to -3; and/or mixtures thereof.
13. A detergent composition according to claim 12 wherein said bleach booster has the formula:



wherein R¹-R³ are moieties having a total charge of from about 0 to about -1; R¹ and R² form part of a common ring; T is selected from the group consisting of: -(CH₂)_b- wherein b is from about 1 to about 8, -(CH(R⁵))- wherein R⁵ is C₁-C₈ alkyl, -CH₂(C₆H₄)-,

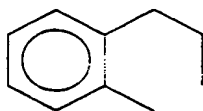


and -(CH₂)_d(E)(CH₂)_f wherein d is from 2 to 8, f is from 1 to 3 and E is -C(O)O-, -C(O)NR⁶ or :



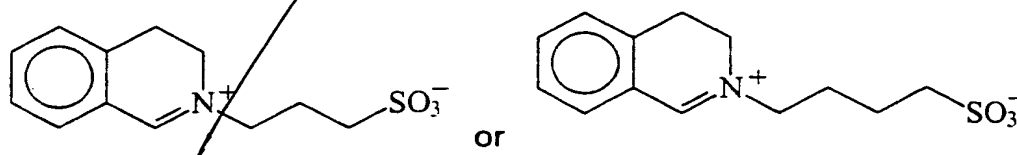
- wherein R⁶ is H or C₁-C₄ alkyl; Z is covalently bonded to T and Z is selected from the group consisting of -CO₂⁻, -SO₃⁻ and -OSO₃⁻ and a is either 1 or 2.

14. A detergent composition according to claims 12-13 wherein R¹ and R² together form the non-charged moiety:

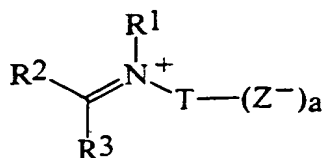


15. A detergent composition according to claims 12-14 wherein said bleach booster is an aryliminium zwitterion and R^3 is H, T is $-(CH_2)_b-$ or $-CH_2(C_6H_4)-$, Z is $-SO_3^-$, a is 1 and b is from 2 to 4.

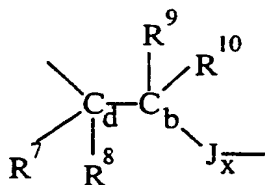
16. A detergent composition according to claims 12-15 wherein said bleach booster is an aryliminium zwitterion having the formula:



17. A detergent composition according to claim 12 wherein said bleach booster has the following formula:



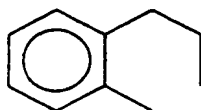
wherein $R^1 - R^3$ is hydrogen or an unsubstituted or substituted radical selected from the group consisting of phenyl, aryl, heterocyclic ring, alkyl and cycloalkyl radicals; R^1 and R^2 form part of a common ring; T has the formula:



wherein x is equal to 0 or 1; J, when present, is selected from the group consisting of $-CR^{11}R^{12}$, $-CR^{11}R^{12}CR^{13}R^{14}$, and $-CR^{11}R^{12}CR^{13}R^{14}CR^{15}R^{16}$; R^7-R^{16} are selected from the group consisting of H, linear or branched C_1-C_{18} substituted or unsubstituted

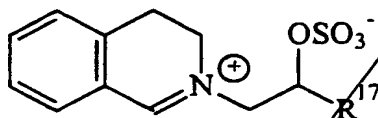
alkyl, alkylene, oxyalkylene, aryl, substituted aryl, substituted arylcarbonyl groups, and amide groups; provided that at least one of R^7 - R^8 must be H or methyl, and that when neither R^9 nor R^{10} is H, one of R^7 - R^8 must be H; Z is covalently bonded to J_x when x is 1 and to C_b when x is 0; and Z is selected from the group consisting of $-CO_2^-$, $-SO_3^-$ and $-OSO_3^-$, and a is 1.

18. A detergent composition according to claim 17 wherein said bleach booster wherein R_1 and R_2 are defined in its formula as R_1 and R_2 together form the non-charged moiety:



19. A detergent composition according to claims 17-18 wherein said bleach booster is an aryliminium zwitterion and R^3 is H, Z is $-OSO_3^-$, a is 1.

20. A detergent composition according to claims 17-19 wherein said bleach booster is an aryliminium zwitterion having the formula:



- where R^{17} is selected from the group consisting of H and linear or branched C_1 - C_{18} substituted or unsubstituted alkyl.

21. A detergent composition according to any of the preceding claims wherein said bleach booster is comprised at a level of from 0.01% to 10% by weight of the total composition.

22. A detergent composition according to claims 12-21 wherein said peroxygen source is comprised at a level of from 0.01% to 60% by weight of the total composition.

23. A detergent composition according to claims 12-22 wherein said peroxygen source comprises a preformed peracid compound selected from the group

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consisting of percarboxylic acids and salts, percarbonic acids and salts, perimidic acids and salts, peroxymonosulfuric acids and salts, and/or mixtures thereof; a hydrogen peroxide source, a bleach activator and/or mixtures thereof.

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24. A detergent composition according to claim 23 wherein said hydrogen peroxide source is selected from the group consisting of perborate compounds, percarbonate compounds, perphosphate compounds and/or mixtures thereof.

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25. A detergent composition according to claim 23 wherein said bleach activator is selected from the group consisting of tetraacetylenediamine, sodium decanoyloxybenzene sulfonate, sodium nonanoyloxybenzene sulfonate, sodium octanoyloxybenzene sulfonate, (6-octanamido-caproyl)oxybenzenesulfonate, (6-nonanamido-caproyl)oxybenzenesulfonate, (6-decanamido-caproyl)oxybenzenesulfonate, and/or mixtures thereof.

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26. A detergent composition according to any of the preceding claims wherein said pectate lyase is present at a level of from 0.0001% to 2%, preferably from 0.0005% to 1.0, more preferably from 0.001% to 0.5% pure enzyme by weight of total composition.

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27. A detergent composition according to any of the preceding claims further comprising a pectin lyase.

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28. Use of a composition according to any of the preceding claims for the removal of plant-, dirt-based stains, highly coloured food soils/stains and body soils.

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29. Use of a composition according to any of the preceding claims for superior fabric whiteness maintenance.
30. Use of a composition according to claims 5-11 for effective highly coloured stains and soils removal on plasticware, and/or for preventing the staining and/or discolouration of the dishware by highly coloured components.

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